

CLAIMS

I claim:

1. A vehicle suspension assembly, comprising:
a first support member attached to a body of the vehicle;
a second support member that moves relative to the first support member;
at least one air spring coupled with the first and second support members; and
a height holding device at least partially within the air spring and supported on one of the support members, the height holding device having a moveable portion that is moveable from a first position where the moveable portion permits relative movement between the support members into a second position where the moveable portion maintains a desired spacing between the support members.
2. The assembly of claim 1, wherein the height holding device comprises a hydraulic ram and the moveable portion comprises a piston portion of the ram.
3. The assembly of claim 2, including an actuator that controls movement of the piston portion.
4. The assembly of claim 3, wherein the actuator moves the piston portion into the second position responsive to an application of the vehicle parking brake.
5. The assembly of claim 1, wherein the moveable portion is selectively locked into the second position.
6. The assembly of claim 1, wherein the moveable portion is moved with a force that is too small to cause an increase in a spacing between the support members.

7. The assembly of claim 1, including a bead plate within the air spring that is associated with the first support member and a retainer plate that is associated with the second support member and wherein the height holding device is at least partially supported on one of the retainer plate or the bead plate.

8. The assembly of claim 7, wherein the height holding device is supported on the bead plate.

9. The assembly of claim 7, including a bumper member supported on an end of the moveable portion that contacts the other of the bead plate or the retainer plate when the moveable portion moves into a position to maintain the desired spacing between the support members.

10. The assembly of claim 1, including a biasing member that biases the moveable portion into the first position.

11. The assembly of claim 10, wherein the biasing member comprises a spring.

12. The assembly of claim 1, including a controller that determines when air pressure from within the air spring will be evacuated and the controller causes the moveable portion to move into the second position to maintain a current spacing between the support members before the air spring pressure is evacuated.

13. An air spring assembly for use in a vehicle suspension system, comprising:

a bead plate supported on a portion of the suspension system that remains stationary relative to the vehicle body;

a retainer plate supported on a portion of the suspension system that is moveable relative to the stationary portion;

a bellows that extends between the bead plate and the retainer plate, the bellows containing a selected air pressure to provide a desired amount of damping of movement of the moveable suspension portion relative to the stationary portion; and

a height holding device at least partially within the bellows and at least partially supported on one of the bead plate or the retainer plate, the height holding device having a moveable portion that is moveable from a first position where there is clearance between the moveable portion and the other of the bead plate or the retainer plate and a second position where the moveable portion contacts the other of the bead plate or the retainer plate.

14. The assembly of claim 13, wherein the height holding device is at least partially supported on the bead plate.

15. The assembly of claim 13, wherein the height holding device comprises a hydraulic ram and the moveable portion comprises a piston portion of the ram.

16. The assembly of claim 15, including an actuator that controls movement of the piston portion.

17. The assembly of claim 16, wherein the actuator is operative to move the piston portion into the second position responsive to an application of the vehicle parking brake.

18. The assembly of claim 13, wherein the moveable portion is selectively locked into the second position.

19. The assembly of claim 13, including a bumper member supported on an end of the moveable portion that contacts the other of the bead plate or the retainer plate when the moveable portion moves into the second position.

20. The assembly of claim 13, including a biasing member that biases the moveable portion into the first position.

21. A method of controlling the height of a bed on a vehicle that includes at least one air spring as part of a suspension assembly on the vehicle, comprising:

(A) placing a height holding device at least partially within the air spring;

(B) determining when a parking brake is applied;

(C) actuating the height holding device to move into a position to maintain a current height of the vehicle bed when the parking brake is applied.

22. The method of claim 21, including evacuating air pressure from the air spring after moving the height holding device into the position of step (C).

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